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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,128	01/20/2004	Yasuo Arishima	5271-0111PUS1	8831

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EXAMINER

CHUO, TONY SHENG HSIANG

ART UNIT	PAPER NUMBER
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1745

NOTIFICATION DATE	DELIVERY MODE
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07/06/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/761,128

Applicant(s)

ARISHIMA ET AL.

Examiner

Tony Chuo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims 1-18 are currently pending. The amended claims do overcome the previously stated 103 rejections. However, upon further consideration, claims 1-18 are rejected under the following new 103 rejections. This action is made FINAL as necessitated by the amendment.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 6, 10, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata et al (US 2002/0071980) in view of Ueda et al (US 2004/0115515).

The Tabata reference discloses a fuel cell comprising: a membrane electrode assembly comprising a positive electrode, a negative electrode, and a solid polymer electrolyte membrane in between the positive and negative electrodes, wherein both the positive and negative electrodes comprises a laminate of two catalyst layers "2a" / "3a" & "2b" / "3b" and an ion-conducting resin, and wherein the catalyst layers are bonded together by a solvent which functions as an adhesive layer (See paragraphs

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[0031],[0032]),[0041] and Figure 4). It also discloses a catalyst content of the catalyst layer that is $0.01 - 1 \text{ mg/cm}^2$ (See paragraph [0042]).

However, Tabata et al does not expressly teach each of the electrode layers that has a thickness of at most $50 \text{ }\mu\text{m}$ and a laminate that has a total thickness of 30 to $300 \text{ }\mu\text{m}$. The Ueda reference discloses a bilayer structure catalyst layer wherein each catalyst layer has a thickness of 5 to $30 \text{ }\mu\text{m}$ (See paragraph [0072]). If each of the catalyst layer is $30 \text{ }\mu\text{m}$, then the total thickness of the laminate would be $60 \text{ }\mu\text{m}$.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tabata fuel cell to include each of the electrode layers that has a thickness of at most $50 \text{ }\mu\text{m}$ and a laminate that has a total thickness of 30 to $300 \text{ }\mu\text{m}$ in order to minimize the overall thickness of the fuel cell, thereby maximizing the current density of the fuel cell.

4. Claims 2, 3, 7-9, 11, 12, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata et al (US 2002/0071980) in view of Ueda et al (US 2004/0115515) as applied to claims 1 and 10 above, and further in view of Kohler et al (US 2003/0224233).

However, Tabata et al as modified by Ueda et al does not expressly teach an adhesive layer that contains a polymer material having a proton conducting property that is present more in an interface part of each of the electrode layers than in an inner part. The Kohler reference teaches the concept of using a carbon black containing adhesive paste to laminate two electrode layers wherein the adhesive contains a Nafion solution that has proton conducting property (See paragraph [0048]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Tabata/Ueda fuel cell to include an adhesive layer that contains a polymer material having a proton conducting property that is present more in an interface part of each of the electrode layers than in an inner part in order to securely bond the electrode layers together by using a low temperature/low pressure laminating process that simplifies the handling and assembly of the membrane electrode assembly.

5. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata et al (US 2002/0071980) in view of Ueda et al (US 2004/0115515) as applied to claims 1 and 10 above, and further in view of Dube et al (US 2004/0089357).

However, Tabata et al as modified by Ueda et al does not expressly an adhesive layer that has a thickness of 1 to 5 μm . The Dube reference discloses an integrated fuel cell device wherein the layers are laminated with adhesive layers that are thinned to a 5 μm thickness (See paragraph [0048],[0049]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Tabata/Ueda fuel cell to include an adhesive layer that has a thickness of 1 to 5 μm in order to reduce the resistance between the electrode layers, thereby improving the performance of the fuel cell.

Response to Arguments

6. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC



JONATHAN CREPEAU
PRIMARY EXAMINER